INVESTIGATION OF SKYLAB DATA

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Monthly Plans and Progress Report

Contract NAS 9-13332

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Processing of S-192 data has begun at the Environmental Research Institute of Michigan, the subcontractor. Questions regarding the quality of data have been discussed with the Technical Monitor and higher quality data may be available.

Attached is a detailed report from ERIM regarding processing of the S-192 data.

Attachment:

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Skylab Support
Progress Report, December 1974

Subcontract #1 Prime NAS9-13332

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Skylab Support
Progress Report, December 1974

The following report serves to report progress for December 1974 on Subcontract #1 of contract NAS9-13332. The financial reports for this contract are being submitted under separate cover.

The objecti of this subcontract is to support the Skylab EREP effort of Michi n State University by: 1) performing standard recognition processing and producing recognition maps and area counts, 2) assisting in the analysis and interpretation of the recognition maps and other extracted information, 3) further developing and adapting, for use on Skylab EREP data, methods for estimating proportions of unresolved objects, and 4) applying proportion estimation techniques to one frame of EREP data to determine to what extent the accuracy of crop acreage estimates is improved.

The month of December was a shortened work month due to a blizzard at the beginning and the holidays at the end. We were able in the time available, however, to begin our processing of the set of S-192 data tapes received at the beginning of the month.

The initial task was to find the fraction of the data sent which covered the EREP test site in southern Michigan, and to assess the quality of the data received.

We began by examining the available three bands of screening film, and determined approximately the times of the first and last scan lines over the test site. Approximately 2 seconds of data covered the entire test area. Once the desired scan lines were identified, a broad portion of the data which included the test area was converted to ERIM format data tapes so we could continue the processing.

At the next step we generated a graymap of SDO 11, using every second line and every second pixel, and determined that we had indeed copied the desired portion of the data.

We continued checking data quality by generating a set of small graymaps, every line and point, one graymap for each SDO. Analyses of these maps showed that eight of the 13 detectors in the S-192 exhibited good signal-to-noise characteristics.

The portion of the spectrum covered by these detectors is shown in Figure 1. Of the other bands, the thermal SDO's (15, 16, 21) and the blue band (0.41 - 0.45 μm, SDO 22) displayed very low signal-to-noise ratios such that no structure could be found in the graymaps. Three other detectors, 0.45 - 0.50 μm, 0.60 - 0.65 μm, and 0.66 - 0.73 μm, (SDO's 18, 5 & 6, 7 & 8, respectively) displayed some noise, which was a function of scan frequency and intermittent loss of synchronization in digitization. It is believed at this time that use of these SDO's in future processing may degrade results of the classifier.

There has been some question as to whether or not we are in receipt of a final data product from JSC or an intermediate product. Until such time as this is cleared up, we will continue to process the data set at hand.

During the coming month we intend to begin the process of locating line and point coordinates of the fields in the test area for which we have ground information. These areas will then serve as training and test fields for the processing of the S-192 data of the Michigan Test Site. After the location process is complete, we will begin the training procedures for the data.

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FIGURE 1. WAVEBANDS OF HIGHER QUALITY SKYLAB S-192 DATA